Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Currently amended) A calibration apparatus ~~of transmission links~~ for array antenna transmission links, where each transmission link comprises ~~. The array antenna transmission link includes~~ an array transmitter, n ~~of~~ power amplifiers, n ~~of~~ uplink and downlink signal separating apparatuses, and n ~~of~~ antenna units, the array ~~. Array~~ transmitter, the n ~~of~~ power amplifiers ~~amplifier~~ and the n ~~of~~ uplink and downlink signal separating apparatuses are placed in a base station, an ~~the~~ output of a base band signal processing module is inputted into the array transmitter, n channels of signal are transmitted by the array transmitter, after going through the power amplifiers ~~amplifier~~ and uplink and downlink signal ~~signals~~ separating apparatuses ~~apparatus~~, the n channels of signal ~~they~~ are transmitted through the antenna units, the calibration apparatus comprising: ~~; the characteristic is~~

a ~~The calibration equipment includes~~ power detecting signal separating apparatus,

a power detecting signal feeder apparatus,

a power detecting apparatus,

a signal synthesizing apparatus, and

an array calibration apparatus;

wherein

the ~~The~~ power detecting signal separating apparatus[[,]] receives an RF ~~the~~ signal from the uplink and downlink signal separating apparatuses ~~apparatus of uplink and downlink signals~~, filters out a ~~the~~ DC signal from the RF signal, and transmits a filtered ~~the~~ RF signal of high frequency to the power detecting signal feeder apparatus~~; at the same time, recovers the power signal from the signal transmitted by the power detecting signal feeder apparatus, does the adjust of calibration weight, and transmits the calibration weight after adjustment to the array calibration apparatus~~;

the ~~The~~ power detecting signal feeder apparatus is configured to transmit~~, on one side, transmits~~ the high frequency RF signal outputted by the power detecting signal separating apparatus~~, on the other side, mixes the power signal outputted by power~~

~~detecting apparatus and high frequency RF signal, and transmits the mixed signal to the power detecting signal separating apparatus;~~

the signal synthesizing apparatus coupled with the n antenna units is configured to synthesize the filtered high frequency RF signal from the power detecting signal feeder apparatus and output the synthesized RF signal to the power detecting apparatus;

the ~~The~~ power detecting apparatus~~, is used to detect~~ is configured to detect a ~~the~~ power of a synthesized RF signal coming from the signal synthesizing apparatus, and ~~outputs the~~ output a feedback power signal to the power detecting signal feeder apparatus;

the power detecting signal feeder apparatus is further configured to mix the feedback power signal outputted by the power detecting apparatus and the filtered high frequency RF signal, and transmit a mixed signal to the power detecting signal separating apparatus;

the power detecting signal separating apparatus is further configured to recover the feedback power signal from the mixed signal from the power detecting signal feeder apparatus, adjust a calibration weight, and transmit an adjusted calibration weight to the array calibration apparatus;

~~The signal synthesizing apparatus is coupled with n of antenna units, used to synthesize RF signal and output to the power detecting apparatus;~~

the ~~The~~ array calibration apparatus[[,]] placed between the base band signal processing module and the array transmitter is configured to calibrate ~~, is used to calibrate~~ the array antenna transmission links ~~link~~ according to the adjusted calibration weight.

2. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 1, wherein ~~the characteristic is,~~ the signal synthesizing apparatus, the signal power detecting apparatus, and the power detecting signal feeder apparatus can form an outdoor unit with the n ~~of~~ antenna units, the outdoor unit is connected with the base station via RF cables ~~cable~~.

3. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 1, wherein ~~the characteristic is,~~ the signal synthesizing apparatus includes a Bulter matrix, (n-1) ~~of~~ couplers, (n-1) ~~of~~ filters and (n-1) ~~of~~ adjustable attenuators, wherein the couplers, the filters and the adjustable attenuators are ~~coupler, filter and adjustable attenuator will be~~ provided in ~~the~~ first (n-1) ~~of~~ transmission links. ~~The~~ the coupler is configured to separate ~~, is used to separate~~ a small part of the RF signal from an ~~the~~ RF beam signal formed according to the Bulter matrix; the separated RF signal is ~~will be~~ filtered by the filters ~~filter~~ and attenuated by the adjustable attenuators ~~attenuator~~, then sent to the signal power detecting apparatus.

4. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 3, wherein an ~~the characteristic is, the~~ attenuation of a source RF signal caused by the separated ~~small part of~~ RF signal does ~~should~~ not exceed 1 dB.

5. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 3, wherein ~~the characteristic is,~~ the signal power detecting apparatus is comprised of (n-1) ~~of~~ detectors and (n-1) ~~of~~ amplifiers, corresponding to the first (n-1) ~~of~~ transmission links; an ~~the~~ RF signal of the first (n-1) ~~of~~ transmission links ~~will~~ form a feedback power signal after processed by the detectors and the amplifiers ~~detecting and amplifying processing~~, the feedback power signal ~~it~~ is outputted to the power detecting signal feeder apparatus.

6. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 3, wherein ~~the characteristic is,~~ the power detecting signal feeder apparatus includes n ~~of~~ signal feeder units, corresponding to n ~~of~~ transmission links, respectively, each of the signal feeder units includes: an inductive circuit L, a capacity circuit C1 and a capacity circuit C2;

when for ~~the~~ signal feeder units ~~unit~~ of a ~~the~~ first transmission link to an ~~the~~ (n-1)th transmission link, wherein the inductive circuit L is configured to mix ~~is used to mix the~~ a low frequency signal of a feedback power signal with a ~~the~~ high frequency RF

signal, the capacity circuit C2 is configured to filter ~~is used to filter the~~ a high frequency part of the feedback power signal, the capacity circuit C1 is configured to prevent ~~is used to prevent~~ sending the low frequency signal of a power detecting signal to the antenna units; and

when ~~while~~ the inductive circuit L in an ~~the~~ n^{th} transmission link is configured to separate a ~~is used to separate the~~ power supply signal from a ~~the~~ high frequency RF signal, the capacity circuit C2 is configured to filter ~~is used to filter~~ a ~~the~~ high frequency part of the power supply signal, the capacity circuit C1 is configured to prevent ~~is used to prevent~~ sending the power supply signal to the antenna units.

7. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 3, wherein ~~the characteristic is,~~ the power detecting signal separating apparatus includes n ~~of~~ inductive circuits L, n ~~of~~ capacity circuits C3, n ~~of~~ capacity circuits C4, (n-1) ~~of~~ A/D converters and a calibration weight calculating apparatus, wherein an ~~the~~ n^{th} transmission link does not have an A/D converter;

when for each of a ~~the~~ first to an ~~the~~ $(n-1)^{th}$ transmission links, an inductive circuit L is configured to separate a ~~is used to separate the~~ feedback power signal from a mixed signal; the capacity circuit C4 is configured to filter a ~~is used to filter the~~ high frequency part of the feedback power signal; a capacity circuit C3 is configured to prevent ~~is used to prevent~~ sending the feedback power signal to the uplink and downlink signal separating apparatus of a corresponding transmission link;

when ~~while~~ for an ~~the~~ n^{th} transmission link, an inductive circuit L is configured to mix a ~~is used to mix the~~ power supply signal with a ~~the~~ high frequency RF signal; a capacity circuit C4 is configured to filter a ~~is used to filter the~~ high frequency part of the power supply signal; a capacity circuit C3 is configured to prevent ~~is used to prevent~~ sending the power supply signal to an ~~the~~ n^{th} uplink and downlink signal separating apparatus;

the A/D converter is configured to perform ~~, is used to perform the~~ A/D converting for a ~~the~~ low frequency feedback power signal, and transmit a converted signal ~~it~~ to the calibration weight calculating apparatus; and

the calibration weight calculating apparatus is configured to adjust a ~~, is used to adjust the~~ calibration weight according to a ~~the~~ value of a received feedback power signal.

8. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 1, wherein ~~the characteristic is,~~ the signal synthesizing apparatus is comprised of n ~~of~~ couplers, n ~~of~~ filters and one signal synthesizer with n channels; the coupler is configured to separate ~~is used to separate~~ a small part of an RF signal from a high frequency RF signal outputted by the power detecting signal feeder apparatus; the separated RF signal is sent to the synthesizer after processed by the filters ~~the processing of the filter~~, then ~~the~~ a synthesized RF signal is ~~after synthesizing will be~~ outputted to the power detecting apparatus.

9. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 8, wherein ~~the characteristic is,~~ the power detecting apparatus is comprised of a detector and a amplifier; a synthesized RF signal ~~will form~~ forms a feedback power signal through ~~the~~ processing of the detector and the amplifier, and is ~~be~~ sent to the power detecting signal feeder apparatus.

10. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 8, wherein ~~the characteristic is,~~ the power detecting signal feeder apparatus includes an inductive circuit L, a capacity circuit C1 and a capacity circuit C2 in any one of ~~the~~ first (n-1) transmission links and an ~~the~~ n^{th} transmission link; wherein

the inductive circuit L in any one of the first (n-1) transmission links is configured to mix a ~~is used to mix the~~ low frequency signal of a feedback power signal with a high frequency RF signal, the mixed signal ~~after mixing~~ is transmitted to a ~~the~~ power detecting signal separating apparatus in the base station; the apparatus capacity circuit C2 is configured to filter a ~~is used to filter the~~ high frequency part of the feedback power signal; the capacity circuit C1 is configured to prevent ~~is used to prevent~~ sending the low frequency signal in the feedback power signal to the antenna units; and

the inductive circuit L of the n^{th} transmission link is configured to separate a ~~is used to separate the~~ power supply signal from a high frequency RF signal; the capacity circuit C2 is configured to filter a ~~is used to filter the~~ high frequency part of the power supply signal; the capacity circuit C1 is configured to prevent ~~is used to prevent~~ sending the power supply signal to the antenna units.

11. (Currently amended) The calibration apparatus of array antenna transmission links ~~for array antenna~~ according to claim 8, wherein ~~the characteristic is,~~ the power detecting signal separating apparatus includes an inductive circuit L, a capacity circuit C3 and a capacity circuit C4 in any one transmission link ~~corresponding to~~ which is chosen in a corresponding ~~the~~ power detecting signal feeder apparatus and an ~~the~~ n^{th} transmission link, the power detecting signal separating apparatus further includes ~~as well as~~ an A/D converter and a calibration weight calculation apparatus; wherein

the inductive circuit L of the any one transmission link is configured to separate a feedback ~~is used to separate the~~ power signal from a ~~the~~ mixed signal, the capacity circuit C4 is configured to filter a ~~is used to filter the~~ high frequency part of the feedback power signal, the capacity circuit C3 is configured to prevent ~~is used to prevent~~ sending the feedback power signal to a first uplink and downlink signal separating apparatus;

when the ~~while~~ inductive circuit L of the n^{th} transmission link is configured to mix a ~~is used to mix the~~ power supply signal with a high frequency RF signal; the capacity circuit C4 is configured to filter a ~~is used to filter the~~ high frequency part of the power supply signal; the capacity circuit C3 is configured to prevent ~~is used to prevent~~ sending the power supply signal to an ~~the~~ n^{th} uplink and downlink signal separating apparatus;

the A/D converter is configured to perform, ~~is used to perform the~~ A/D converting for a ~~the~~ low frequency feedback power signal, and transmit the converted low frequency feedback power signal ~~transmit it~~ to the calibration weight calculating apparatus; and

the calibration weight calculating apparatus is configured to adjust , ~~is used to adjust the~~ calibration weight according to a ~~the~~ value of a received feedback power signal.

12. (Currently amended) A calibration method of array antenna transmission links ~~for array antenna, the characteristic is, comprises below steps~~ comprising:

first, obtaining ~~get the~~ initial values of gain calibration weight and phase calibration weight of a transmission link;

then calculating ~~calculate~~ the gain calibration weight and the phase calibration weight of the transmission link; and

calibrating ~~calibrate the~~ a gain and a phase of an array transmission link using a ~~the above~~ calculated calibration weight.

13. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 12, wherein ~~the characteristic is, the step to get the~~ obtaining initial values of gain calibration weight and phase calibration weight of a transmission link[[,]] further comprises:

controlling a ~~control the~~ base band signal to make a ~~and make the~~ base station only having one channel of link transmission ~~sending~~ signal;

adjusting the ~~adjust~~ the gain calibration weight for the transmission ~~this~~ link such that a transmission, ~~and make the transmitting~~ power of the transmission ~~this~~ link reaches a rated ~~meet the rating~~ value, ~~; then~~ the gain calibration weight at this time is the initial value of the gain calibration weight for the transmission link ~~this link~~; and

performing ~~perform~~ the above operation for all of ~~the~~ transmission links in the base station, to get an ~~the~~ initial value of gain calibration weight for each transmission link.

14. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 12, wherein obtaining ~~the characteristic is, the step to get the~~ initial values of gain calibration weight and phase calibration weight of a transmission link[[,]] further comprises:

firstly, controlling at a base band each ~~control all of the~~ transmission link to send signal with a same phase; ~~in base band,~~

then selecting a ~~select the~~ first transmission link as a ~~the~~ reference channel, ~~the~~ other channels as channels ~~channel as the channel~~ to be calibrated; [[,]]

adjusting a ~~adjust the~~ phase of a transmission signal ~~transmitting signal for the calibrating channel~~ on the channels to be calibrated such that a ~~, make the~~ signal power of a first antenna unit is at maximum[[,]] and ~~the~~ signal powers of other antenna units ~~unit~~ are at minimum; [[,]]

saving a ~~save the~~ phase adjusting coefficient of transmission link at this time, which is represented by a vector $\begin{bmatrix} 0 & \phi_{adj1} & \cdots & \phi_{adjn} \end{bmatrix}$; [[,]]

then calculating an ~~calculate the~~ inverse matrix W_{but}^{H} or W_{but}^{-1} of an ~~the~~ equivalent transmission coefficient matrix of a Bulter matrix; [[,]] and

choosing a ~~choose the~~ first line vector of the ~~above~~ inverse matrix, ~~which is~~ respected by $V_{butler,1} = \begin{bmatrix} \phi_{1,1} & \phi_{1,2} & \cdots & \phi_{1,n} \end{bmatrix}$, wherein ~~then~~ the initial value of the phase calibration weight for the transmission link is $\begin{bmatrix} \frac{0}{\phi_{1,1}} & \frac{\phi_{adj2}}{\phi_{1,2}} & \cdots & \frac{\phi_{adjn}}{\phi_{1,n}} \end{bmatrix}$.

15. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 12, wherein obtaining ~~the characteristic is, the step to get the~~ initial values of gain calibration weight and phase calibration weight of a transmission link[[,]] further comprises:

firstly, choosing ~~choose~~ a transmission link as the reference channel, the other transmission links as the channel to be calibrated ~~reference channels~~; [[,]]

controlling ~~control~~ the reference channel and one of the channels ~~channel~~ to be calibrated to transmit ~~sending~~ signal simultaneously; [[,]]

adjusting a ~~adjust the~~ phase of a base band signal in the one channel to be calibrated to [[,]] make a ~~the~~ power of a synthesized signal of ~~the~~ signals transmitted by the reference channel and the one channel to be calibrated ~~two channel~~ at minimum, ~~then~~ wherein a ~~the~~ conjugate of a ~~the~~ phase adjusting coefficient for the one channel to be calibrated is the initial value of the phase calibration weight for this channel; and

choosing ~~choose~~ another channel to be calibrated, repeating ~~repeat~~ the depicted operation[[,]] until obtaining ~~get the~~ initial values of phase calibration weight for each ~~all of the~~ transmission link ~~links~~.

16. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 12, wherein calculating ~~the characteristic is, the step to calculate~~ the gain calibration weight and the phase calibration weight of the transmission link ~~and adjust gain,~~ further comprises:

taking a rated ~~take rating~~ transmission power as a ~~the~~ base power value for ~~the~~ calibration; [[,]]

then using a ~~use~~ dichotomy method to calculate the ~~transmission~~ gain calibration weight of the ~~each~~ transmission link; and[[,]]

adjusting ~~adjust~~ the gain of the transmission link according to the calculated gain calibration weight, until the transmission power of the ~~each~~ transmission link meets ~~all meet the~~ a requested transmission power.

17. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 16, wherein calculating ~~the characteristic is, the step to calculate~~ the gain calibration weight and the phase calibration weight of the transmission link ~~and adjust gain~~, further ~~specifically~~ comprises:

step 1) setting a ~~set the~~ transmission link number NumCh =1;

step 2) judging ~~judge~~ whether the link number NumCh is larger than ~~the~~ a number of transmission links ~~link number~~ of an array antenna, if the link number NumCh is larger than the number of the transmission links ~~link number~~, then ending a ~~the~~ gain calibration ~~is end~~;

step 3) if the link number NumCh is less than or equal to the number of the transmission links ~~link number~~, then controlling at a base band a transmission ~~control the transmit~~ signal of a NumChth transmission link ~~in base band~~;

step 4) detecting a ~~detect the~~ power of a transmission signal[[,]] to generate a feedback power signal;

step 5) performing an ~~perform the~~ A/D converting for ~~above depicted~~ the feedback power signal, obtaining a ~~get the~~ power of the transmission signal;

step 6) judging ~~judge~~ whether an ~~the~~ absolute value of a ~~the~~ difference between the power obtained in step 5) ~~this power~~ and a rated ~~rating~~ power is less than a permitted

error, if the difference ~~it~~ is less than the permitted error, then adding 1 to the ~~add current~~ transmission link number NumCh ~~with 1~~, and jumping ~~loop~~ back to step 2);

step 7) if the absolute value of the difference is larger or equal to the permitted error, then judging ~~judge~~ whether ~~it can continue~~ the calibration can be continued, if the calibration can be continued, then using a dichotomy method to adjust the gain calibration weight of ~~this~~ the transmission link ~~using dichotomy~~, then calibrating ~~calibrate~~ the NumChth transmission link according to an ~~the~~ updated gain calibration weight, then jumping ~~loop~~ back to step 2); and

step 8) if ~~it can not continue~~ the calibration cannot be continued, then prompting a ~~prompt the~~ failure of the gain calibration of the NumChth transmission link, and ending ~~end~~ the gain calibration of the transmission link.

18. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 17, wherein ~~the characteristic is, the step to judge whether it can continue the calibration in~~ step 7) further comprises ~~comprise~~: judging ~~judge~~ whether an ~~the~~ iterative number of the dichotomy method exceeds a predetermined ~~the setting~~ number, if the iterative number ~~it~~ exceeds the predetermined number, then assuming ~~assume~~ that the calibration cannot be continued ~~it can not continue the calibration~~; if the iterative number ~~it~~ does not exceed the predetermined ~~setting~~ number, ~~so~~ further judging whether the ~~judge~~ gain calibration weight is at maximum or whether ~~the~~ iterative weight values for a ~~the~~ contiguous twice dichotomy method are same, if the gain calibration weight is at maximum or the weight values for the contiguous twice dichotomy are the same, then assuming ~~it assumes~~ that the calibration can not be continued.

19. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 14, wherein obtaining initial values of gain calibration weight and phase calibration weight of a transmission link ~~the characteristic is, the step to calculate the phase calibration weight of transmission link and adjust phase~~, further comprises:

choosing ~~choose~~ any ~~one of the~~ line vector $V_{bulter,i} = \{\phi_{i,1} \quad \phi_{i,2} \quad \cdots \quad \phi_{i,n}\}$ from ~~one of~~ a ~~the~~ conjugate matrix or an inverse matrix of the equivalent weight coefficient matrix of the transmission link of the ~~for~~ Bulter matrix as a set of beam weights to weigh each channel of ~~weight, weight each channel's~~ signal; [[,]]

then using the ~~use~~ Bulter matrix for RF beam forming; and [[,]]

using a ~~use~~ direct searching method to adjust the ~~this~~ set of beam weights ~~weight~~ continuously, until a ~~the~~ signal ~~after Bulter matrix beam forming~~ only has a signal is only outputted at an ~~output at the~~ i^{th} antenna unit port after Bulter matrix beam forming, and ~~there is~~ no signal is outputted at ~~output at the~~ other antenna unit ports ~~port~~, at that time a ~~the~~ beam weight of the transmission link is marked as $\{w_1 \quad w_2 \quad \cdots \quad w_n\}$, then a ~~the~~ final phase calibration weight of the transmission link is $W_{PHASE} = \left\{\frac{w_1}{\phi_{i,1}} \quad \frac{w_2}{\phi_{i,2}} \quad \cdots \quad \frac{w_n}{\phi_{i,n}}\right\}$.

20. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 19, wherein obtaining initial values of gain calibration weight and phase calibration weight of a transmission link further ~~the characteristic is, the step to calculate the phase calibration weight of transmission link and adjust phase, specifically~~ comprises:

step 1) setting a ~~set the~~ transmission link number NumCh =1, setting an ~~set the~~ initial value of a phase calibration weight Wphase(0)=[0 , 0 , … , 0], a ~~the~~ maximum loop number is M, an initial value of a ~~the~~ loop variation loop ~~loop's initial value~~ is 0;

step 2) controlling the ~~control the~~ transmission signal of ~~all of~~ the transmission link at the base band;

step 3) detecting a ~~detect the~~ power of the transmission signal, form ~~the~~ a feedback power signal;

step 4) performing an ~~perform the~~ A/D conversion ~~converting~~ for ~~above depicted~~ the feedback power signal, and obtaining ~~get~~ the power of the transmission signal, saving a ~~save this~~ power value;

step 5) adding 1 to a ~~add the~~ phase calibration weight of a ~~the~~ NumChth transmission link ~~with 1~~, judging ~~judge~~ whether the phase calibration weight of the NumChth transmission link exceeds a ~~the~~ value range of phase calibration weight; if the phase calibration weight of the NumChth transmission link ~~it~~ does not exceed the value range, then calibrating ~~calibrate~~ the phase of the NumChth transmission link, and jumping ~~loop~~ back to step 3);

step 6) if the phase calibration weight of the NumChth transmission link ~~it~~ exceeds the value range, then judging ~~judge~~ whether a ~~the~~ variation range of the power of the transmission signal meets a ~~the~~ request, if the variation range ~~it~~ does not meet the request, then prompting a ~~prompt the~~ failure of a ~~the~~ phase calibration of the NumChth transmission link;

step 7) if the variation range ~~it~~ meets the request, then recording a ~~record the~~ phase calibration weight corresponding to a ~~the~~ maximum value of the power of the transmission signal ~~power~~, adding 1 to ~~add~~ the transmission link number NumCh ~~with 1~~, then judging ~~judge~~ whether the transmission link number NumCh exceeds a ~~the~~ number of transmission links of an array antenna, if the transmission link number NumCh ~~it~~ does not exceed the number of the transmission links of the array antenna, then jumping ~~loop~~ back to step 3);

step 8) if the transmission link number NumCh ~~it~~ exceeds the number of the transmission links of the array antenna, then setting the ~~set~~ transmission link number NumCh as 1, adding 1 to a ~~add the~~ loop variation ~~with 1~~, the phase calibration weight Wphase(loop)=[w(1) , w(2) , … , w(n)] is a ~~the~~ phase calibration weight corresponding to the maximum value of the power of the transmission signal;

step 9) judging ~~judge~~ whether a ~~the~~ current phase calibration weight Wphase(loop) is same as a ~~the~~ calibration weight Wphase(loop-1) of last time, if they are the same, then ~~it means~~ assuming that the phase calibration of the transmission link is successful ~~successes~~, modifying ~~modify~~ the calculated phase calibration weight using a ~~the~~ first line vector $V_{bulter,1}$ of the inverse matrix of the ~~transmission link's~~ equivalent weight coefficient matrix of the transmission link of the ~~for~~ Bulter matrix, that is, $W_{PHASE} = W_{PHASE}(loop)/V_{bulter,1}$, ending the phase calibration ~~is end~~; and

step 10) if they are not the same, then judging ~~judge~~ whether the loop variation loop is larger than the maximum loop number M, if the loop variation loop is larger than the maximum loop number M ~~it is true~~, then prompting a ~~prompt the failure~~ of the phase calibration of the transmission link, ending the phase calibration ~~is end~~, otherwise jumping ~~loop~~ back to step 3).

21. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 15, wherein obtaining initial values of gain calibration weight and phase calibration weight of a transmission link ~~the characteristic is, the step to calculate the phase calibration weight of transmission link and adjust phase,~~ further comprises:

taking ~~take~~ any one of ~~the~~ transmission links ~~link~~ of an array antenna as a benchmark; and [[,]]

then adjusting a ~~adjust the~~ phase of other transmission links using algorithm to[[,]] make an ~~the~~ intensity of the synthesized signal reach maximum, then a ~~the~~ corresponding vector $W_{PHASE} = [1 \quad e^{j\phi_2} \quad \cdots \quad e^{j\phi_n}]^T = [1 \quad e^{j(\phi_1-\phi_2)} \quad \cdots \quad e^{j(\phi_1-\phi_n)}]^T$ is the phase calibration weight of the transmission link ~~for~~ of an ~~the~~ array antenna, wherein ϕ_n stands for a ~~the~~ phase of an ~~the~~ n^{th} transmission link, T stands for transpose operation.

22. (Currently amended) The calibration method of array antenna transmission links ~~for array antenna~~ according to claim 21, wherein obtaining initial values of gain calibration weight and phase calibration weight of a transmission link further ~~the characteristic is, the step to calculate the phase calibration weight of transmission link and adjust phase, specifically~~ comprises:

step 1) setting a ~~set the~~ transmission link number NumCh =2, setting an ~~set the~~ initial value of a ~~the~~ phase calibration weight of each of all ~~of the~~ transmission links as 0, that is Wphase=[0 , 0 , … , 0];

step 2) judging ~~judge~~ whether the transmission link number NumCh is less than or equal to a number of ~~the~~ transmission links ~~link number~~ in the array, if the transmission

link number NumCh ~~it~~ is larger than the number of the transmission links ~~link number~~, then ending the ~~this~~ phase calibration of the transmission link ~~is end~~;

step 3) if the transmission link number NumCh ~~it~~ is less than or equal to the number of the transmission links ~~link number~~, then controlling a ~~control the~~ transmission signal ~~in~~ of a first transmission link ~~line~~ and a NumChth transmission link ~~in~~ at a base band;

step 4) detecting a ~~detect the~~ power of the transmission signal to[[,]] form ~~the~~ a feedback power signal;

step 5) performing an ~~perform the~~ A/D conversion for ~~above~~ the feedback power signal, obtaining ~~get~~ the power of the transmission signal, and storing a ~~store this~~ power value;

step 6) adding 1 to a ~~add the~~ phase calibration weight of the NumChth transmission link ~~with 1~~, judging ~~judge~~ whether the phase calibration weight of the NumChth transmission link is less than or equal to a ~~the~~ value range of phase calibration weight, if the phase calibration weight of the NumChth transmission link ~~it~~ is less than or equal to the value range, then calibrating a ~~calibrate the~~ phase of the NumChth transmission link, then jumping ~~loop~~ back to step 2);

step 7) if the phase calibration weight of the NumCh transmission link ~~it~~ is larger than the value range, then judging ~~judge~~ whether a ~~the~~ variation range of the power of the transmission signal ~~power~~ can meet a ~~the~~ request, if the variation range ~~it~~ can not meet the request, then prompting a ~~prompt the~~ failure of the phase calibration of the NumChth transmission link;

step 8) if the phase calibration weight of the NumCh transmission link ~~it~~ meets the request, then recording ~~record~~ the phase calibration weight corresponding to a ~~the~~ maximum value of the power of the transmission signal ~~power~~, then adding 1 to ~~add~~ the transmission link number ~~with 1~~, jumping ~~loop~~ back to step 2).